



Research Article

Unveiling Patients' Perspectives: Impact of Varying Durations of Advanced Access Scheduling System Implementation on Access to Care in Academic Family Medicine Clinics

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Abstract

Introduction: This study focused on understanding patients' experiences with access to care in primary care teaching practices that had implemented the Advanced Access (AA) scheduling system for varying durations. **Methods:** A cross-sectional survey was conducted among patients visiting one of nine teaching clinics affiliated with the University of Montreal and McGill University in Quebec, Canada in 2018, using a self-administered and anonymous questionnaire. 1,979 patients participated. **Results:** The findings revealed that a greater duration (2 years or more) with the AA scheduling system did not necessarily guarantee a better experience with access to care. Patients in clinics that had used AA for more than 2 years reported more difficulty in obtaining appointments sooner compared to patients in clinics with less than year or 1 to 2 years since initiating AA. **Discussion:** The implementation of changes in appointment scheduling systems can significantly impact the patient experience of accessing healthcare services. However, organizations often fail to monitor service provision over the long term, leading to a lack of understanding regarding the perspectives of patients whose experiences may differ from initial expectations. By incorporating long-term monitoring strategies, healthcare organizations can ultimately deliver more satisfactory and patient-centered care. **Conclusion:** The implications of this research extend beyond appointment scheduling systems, serving as a reminder that organizations must continually assess the patient experience to ensure their services remain responsive and patient-centered.

Keywords: Access to health care; Primary Health Care; Patient reported experience measure; Advanced access Medical education or Academic Environment

Introduction

Timely access to Primary Health Care (PHC) is a major challenge for many countries [1-5]. Canada's struggle with this issue has been as highlighted in a recent Commonwealth Fund study, [6] which ranked Canada 9th out of 11 countries in terms of timely access to care. Specifically, 43 % reported seeing a doctor or nurse on the same or next day, last time they needed medical care compared to 77% in the Netherlands.

To address political [7-9] and social pressures [10,11] to provide timely health services, many primary care clinics in Quebec, including academic clinics within the University of Montreal and McGill networks, have implemented the "advanced access" (AA) scheduling system. AA described extensively by Murray and Berwick [12, 13] has received endorsements from the College of Family Physicians of Canada which sets standards and accredits postgraduate training in family medicine in Canada [14].

AA is a scheduling system that is said to leave 65% of slots free for same-day calls, while reserving 35% of slots for booked appointments [13,16]. The 2003 paper by Murray and Berwick gives a range of 10% to 90% for open appointments available for booking at the start of each day [17]. Clinicians whose patients are older or who have a paediatric practice with many children may have lower ratios. The goal is to provide patients with timely access to their own family physician, thereby promoting good relational continuity [18].

Does it work? Studies conducted primarily in American primary care settings, have shown that AA can lead to a reduction in wait time for appointment by 83%, decrease no-show rates by 67% and a 75% decrease in the emergency room visits [19].

However, in Canada, studies focusing on the impact of AA on access outcomes are limited. One year after transition to advanced access there was a 28% reduction in triage level 4 and 5 visits to the local EDs by patients of the practice [16]. Another study examined the control of chronic diseases after one year of AA implementation and found no significant changes in the clinical indicators of control of hypertension and diabetes [20]. Another outcome measure often used, the wait time for an appointment, refers to the time it takes to get the third available appointment [21]. The last two Canadian studies in academic setting used it. One found a decrease of 10.1 days, nine months after implementing AA and also found a drop in no-show rates from a monthly average of 3.33% (0.76%) to 1.89% (0.32%) ($P < .001$) [15]. Another study compared clinics in an academic network in Québec that have implemented AA with those that had not, and found a decrease in

the wait times for appointments by 4.3 days within an 18 months period [22].

While the effectiveness of AA has been examined in terms of reduced wait times, no-show rates, and emergency room visits, few studies have focused on patients' perceptions of this approach [19]. Studies that have measured patient satisfaction often used short survey, with 1 to 5 questions related to wait time, appointment experience [23] or satisfaction with the visit [24, 25]. Some studies used surrogate data such as reduced no-show rate, to infer patient satisfaction [26].

Most studies examining the effectiveness of AA have been conducted over relatively short periods following implementation ranging from 6 months to one year [15,23,24,26-30] Only two studies have examined the long-term effects of AA implementation, with durations of 2,5 and 5 years [31,32].

Therefore, this study aims to expand upon previous research by investigating whether patient measures of access vary based on the duration since AA implementation in teaching clinics. The hypothesis is that clinics that have been utilizing the AA system for a longer period will have better access measures, which will positively influence patients' perception of access. The objective of this study is to compare patients' experiences with access to care in primary care teaching practices that have implemented the AA scheduling system for varying durations.

Methods

Study design and setting

A cross-sectional survey was conducted among patients visiting nine advanced-access Family Medicine Teaching Clinics (FMTCs) in place at the University of Montreal and McGill University (Canada) in 2018. Ethical approval was obtained from Centre Intégré de Santé et Services Sociaux de Laval and the ethics boards associated with participating clinics (Number 2017-2018 / 04-01-E).

Theoretical framework

The survey questionnaire was developed based on Levesque's Patient Centered Access Framework [33,34] which defines 5 dimensions of access to care. For this paper the focus was on availability & accommodation dimension, which pertains to the ease of obtaining services in a timely manner.

Study population

The study population included patients attending the clinic for their own care, whether scheduled or walk-in (urgent). Eligibility criteria were as follows: 1) being 18 years of age or over 2) registered with a clinician at the teaching clinic, and 3) able to read and answer a questionnaire in French or English. Patient on their

first visit to the clinic or those who had previously completed the questionnaire were excluded.

Patient questionnaire development

The questionnaires were developed by selecting specific questions from validated instruments that mapped onto concepts in the Access Framework [35-39]. Questions were adapted to our care context and translated into French. The questionnaire consisted of a pre-visit questionnaire to be completed while waiting for their consultation and a post-visit questionnaire completed just after the consultation. The development process of the questionnaire has been described elsewhere [40].

Organizational questionnaire

In addition to the patient questionnaire, an organizational questionnaire was sent to the directors of the participating clinics. This questionnaire collected information on clinic characteristics, such as the number of patients, medical, professional, interdisciplinary work and administrative resources, the process for accessing care, and specific questions related to AA implementation (Table 1).

Data collection process

The questionnaires were handed out to consecutive series of patients over a one- or two-week period, covering different times representing the clinical hours of service. Patients were given both the pre-visit and post-visit questionnaires upon arrival at the clinic. They had the option to refuse to participate explicitly at the reception or leaving blank questionnaires in the sealed box in the waiting room. The clinics were asked to keep a record of the number of patients invited to complete the questionnaire and the number of explicit refusals.

Data Analysis

Initial statistical power calculation indicated that 200 completed questionnaires per clinic were needed or at least 35 responses in the smallest category of variable would give us 80% statistical power to detect with a two-tailed $\alpha=0.05$ a difference of 0.5 points on the categorical response options of the main outcome measure, which is scaled from 1 to 5.

Outcome measures were various access indicators as per dimensions in the Patient-Centered Access Framework, but the main outcome of interest was perceived the ease to be seen earlier than the usual appointment wait if needed in case of minor emergency. The minor emergency was self-identified by respondents and being defined has any new or worsening health problem requiring medical attention within 24 to 48 hours (e.g. persistent fever, urinary tract infection, flu, sore throat, vaginitis, cut requiring stitches...). The selection of this indicator is driven by the objective of more accurately reflecting an appointment system that facilitates timely

patient access to care. To more accurately differentiate between the necessity of a timely appointment and the patient's personal satisfaction with a delay, it is essential to recognize that in a routine examination, the assessment of the latter may vary significantly from one patient to another. For instance, if an appointment is offered in three days or two weeks, some patients may find this delay acceptable, while others may prefer a longer wait depending on their availability. However, in a more urgent situation, this same timeframe may be perceived as unacceptable by the majority. The main independent variable was the duration of AA implementation, according to three selected groups: 1) Initial - less than a year; 2) Intermediate - 1 to less than 2 years, and 3) Established - 2 years or more.

The selection of duration limits is arbitrary and based on clinical experience, which indicated the potential for differences. Our hypothesis was that, with the benefit of hindsight and experience, teams would be able to make adjustments to the evolution of their access.

We first examined the relationships between all the access indicators (Table 3) and AA durations using chi-squared statistics, using a two-tailed $\alpha=0.05$ as the level of statistical significance. Clinics differed significantly by mix of patient age, highest level of education, self-reported financial status, occupational status, and language spoken at home. Consequently, we included these variables as potential confounders in generalized linear regression models – one model per outcome measure. We used ordinal regression for outcomes with more than 2 categories, verifying the proportional odds assumption for each outcome. Potential patient confounders were included in the final models as covariates irrespective of statistical significance to provide greater precision around the estimate of the effect of AA duration. Analyses and regression analysis were conducted using SAS 9.4 (SAS 2020).

Since clinic AA duration of experience was associated with distinct organizational characteristics such as number of patients, geographic location, and size of care team, we further used multi-level regression both to control clustering of the outcome within clinics and to explore whether the effect of AA level would be explained by the available clinic variables. We used the GLIMMIX procedure in SAS with a random intercept model and we added the clinics characteristics after examining between clinic variation.

Results

The study included nine family medicine teaching clinics, with seven located in urban areas. The number of patients registered per clinic ranged from 4,400 to 29,435. Five clinics maintained careful recruitment records, with a refusal rate ranging from 4% to 10%. A total of 1,979 patients participated in the study, with 201 to 239 completed questionnaires per participating clinic.

Clinics characteristics

The organizational details of AA implementation varied among clinics. Three of the nine clinics of the clinics used a measurement tool to assess service supply (number of available appointments) and demand (number of patients calls for appointments) and those that did indicated that it only partially helped them maintain the balance between supply and demand (Table 1).

Experience with advanced access	Initial (<1 year)	Intermediate (1 to <2 years)	Established (2 years or more)
n of clinics per group	2	2	5
Patients per clinic per group, n (range)	16300 (4935 to 11365)	24411 (11751 to 12660)	82631 (4400 à, 29435)
Respondents (% of total)	457(23)	407(21)	1115(56)
Total number of physicians per group (range number of physicians per clinic)	26 (12 to 14)	53 (16 to 23)	90 (6 to 52)
Total number of nurse practitioners per group, n (range per clinic)	2 (1 to 1)	7 (1 to 3)	2 (0 to 2)
Range of open hours on weekends	0 to 4	4 to 6	4 to 8
Availability in weeks of AA Opening schedule for appointments	2 à 3	2 à 3	2 à 4
N of clinics per group with a contingency plan	0	1	3
N of clinics per group with a measure of demand and service offer	0	2	1
Does this plan help keep balance between demand and service offer	-	Partially	Partially
N of clinics per group where patients can leave a message	Yes (2)	Yes (2)	Yes (3)
N of clinics per group where patient is able to schedule an appointment online	0	2	0 (changes were under way for 4)

Table 1: Comparison of teaching clinics by duration of use advanced access scheduling system.

Patients characteristics

The sociodemographic characteristics of patients who responded to the pre-visit questionnaire are summarized in Table 2. Approximately 70% of the respondents were women and the average age was 49 years. Between 38% and 57% had been registered at the clinic for more than 5 years, and most were attending for a routine or follow-up appointment (between 79% and 83%). Most patients reported seeing their usual GP on the day of recruitment (63 to 74%), who was often a teaching doctor (66 to 73%).

Characteristics	Initial (< 1 year)	Intermediate (1 to < 2 yrs)	Established (2 yrs or more)	P value
Respondents n (% of total 1979)	457 (23)	407 (21)	1115 (56)	--
Age (median)	54	46	43	--
Sex n (% female per level)	282 (67)	268 (69)	739 (70)	ns* (p=0,66)
Financial situation (n=1844)				
	n (%)	n (%)	n (%)	
Very poor, poor, tight	157 (37)	123 (32)	335 (32)	ns* (p=0,25)
Comfortable	224(53)	215(56)	578(56)	
Very Comfortable	39(9)	48(12)	125(12)	
In general, would you say your health is (n=1864)				
Bad or fair	95 (23)	76 (19)	210 (20)	ns* (p=0,11)
Good	190 (45)	178 (46)	434 (41)	
Very good, excellent	134 (32)	137 (35)	410 (39)	
What is your highest level of education (n=1815)				
No schooling completed	26(6,3)	15(4)	42(4)	p=.003
Secondary school	162 (39)	137 (36)	338 (33)	
College	112(27)	93(25)	235(23)	
University	116(28)	135(36)	404(40)	
Language spoken at home (n=1871)				
French or English	377 (89)	328 (84)	822 (78)	p <0.0001
Other	48 (11)	62 (16)	234(22)	
*ns: non-statistically significant				

Table 2: Characteristics of patients, by duration of use of advanced access scheduling system in their teaching clinic.

Patients in the established group (duration of AA implementation 2 years or more) had a higher level of education (university) than those in the other groups. In this group, there was also a higher proportion of respondents whose home language was not English or French (22% vs. 11% for Initials and 16% for Intermediate. Self-reported overall health and financial status were similar across AA groups.

Patient perceptions of access

The results of the bivariate analysis did not confirm a better perception of access with longer experience with AA. None of the multilevel regression analysis changed the overall conclusions (except for one, noted below). Here we present the bivariate results by dimension, as they have the benefit of being informative.

Timeliness of access

Although most patients reported that it was easy to be seen sooner, patients in the established group were more likely (40%) to report difficulty (not easy at all, not easy, moderately easy) getting an appointment sooner than patients in the Initial (33%) or intermediate groups (33%). On the day of the recruitment appointment, patients in the established group had longer waiting times for that day's appointment than patients in the Initial and Intermediate groups. However, patients' perceptions of the usual waiting time for an appointment were similar between groups. (Table 3).

To better capture potential problematic access for urgent care, we asked patients if they consulted elsewhere (emergency room and another clinic) in the past year. A quarter consulted another clinic and there were no differences between the three groups. A third of patients consulted the emergency department for urgent care. (Table 3). Of the latter, a third consulted twice or more, regardless of the clinic's duration with AA. (not shown)

Phone access

The ease of obtaining telephone advice differed significantly between AA experience groups. Patients in the established group reported poorer experiences with phone access (27%) compared to those in the Initial and Intermediate groups (16% and 17%) (p=0.001) (Table 3).

Patient experience (Value, n (%))	Initial < 1 year n (%)	Intermediate (1 to < 2 years) n (%)	Established (2 years or more) n (%)	P value
If you need to be seen quickly, how easy is it to be seen sooner? (n=1562)				
Not easy at all, not easy	36 (10)	35 (11)	128 (15)	p=0.02
moderately easy	83 (23)	72 (22)	222 (25)	
Easy, very easy	250 (68)	219 (67)	517 (60)	
How long was the wait for this appointment? (n=1475)				
1 day or same day	126 (37)	91 (29)	173 (21)	p<0.0001
2 to 6 days	59 (17)	52 (17)	175 (21)	
7 to 13 days	52 (15)	67 (22)	156 (19)	
14 days or more	108 (31)	102 (33)	314 (38)	
How do you rate the usual wait time for an appointment? (n=1893)				
Poor, fair	86 (20)	71 (18)	203 (19)	n.s*
Good	151 (35)	143 (37)	419 (39)	
Very good, excellent	191 (45)	178 (45)	451 (42)	
In the past 12 months have you consult another clinic for minor emergencies? (n=1879)				
Yes	86 (20)	92 (24)	263 (25)	ns
No	338 (80)	298 (76)	803 (75)	(p=0,20)
How many times have you consulted another clinic? (n=341)				
1	19 (33)	26 (34)	92 (45)	ns (p=0,19)
2	22 (38)	25 (33)	71 (34)	
3 and more	17 (29)	25 (33)	44 (21)	
In the past 12 months have you consulted the emergency room? (n=1874)				
Yes	134 (32)	93 (24)	341(32)	p= 0,004
No	286 (68)	302 (76)	718 (68)	

How easy is it to get medical advice by phone to help you solve your health problem? (n=1020)				
Not easy at all, not easy	40 (16)	38 (17)	145 (27)	p<0.001
Moderately easy	53 (21)	74 (33)	138 (25)	
Easy, very easy	159 (63)	111 (50)	262 (48)	
*ns: non-statistically significant				

Table 3: Comparison of patient experience of care, by duration of use of advanced access scheduling system, in their teaching clinic.

Discussion

The key finding of this study is that patients’ perception of access, did not support the hypothesis of better perceived access with longer AA implementation. Thus, longer duration with advanced access does not guarantee a better experience with access to care for patients in academic clinics.

Patients, in clinics with longer duration with AA reported more difficulty in obtaining an appointment sooner, longer wait times and poorer experiences with phone access.

These results may suggest a temporary “honeymoon” effect when all indicators are still under control for the initial group while clinics with longer duration with AA might go thru schedule overruns, such as difficulties in balancing supply and demand, under-optimized or under-utilized interdisciplinary practice, to which may be added a lack of administrative staff, or simply new and untrained personnel, insufficient monitoring of the appointment system and absence of contingency plans.

Maintaining balance between supply and demand

Data from our teaching network showed that clinics made significant efforts to provide access to new patients without a primary care provider. [22] Responding to these demands without adjusting the scheduling system may explain some of the imbalance between supply and demand for services. In addition, clinicians’ teaching responsibilities, such as supervising trainees and serving on university and local committees, coupled with additional clinical activities in areas such as obstetrics, emergency medicine, geriatrics, and primary care hospitalization, contribute to the lack of availability and exacerbate the imbalance. As Murray and colleagues have pointed out, “AA is not sustainable if patient demand for appointments persistently exceeds the capacity of physicians to provide appointments [12].

But why don’t clinics that have been in AA longer achieve the same or better results? If these possible explanations are true, we think it is the time it takes for this imbalance to impact the services offered and, therefore, patient perceptions.

Interdisciplinary practice

Furthermore, in this scenario, the increase in patient’s numbers is not accompanied by a corresponding and immediate increase in the availability of professionals offering interdisciplinary medical care [22]. This pillar of AA model is crucial for effectively monitoring patients with complex needs. A limited number of professionals relative to the population being served, hampers the full implementation of the model, and restricts the capacity of follow-up visits by other healthcare professional. Consequently, less time is available to spend with patients who require additional attention, contributing to schedule overruns.

Monitoring the appointment system

Unfortunately, three out of nine clinics measured or monitored the balance between demand and appointment availability. If factors previously mentioned impeded progress and forced clinicians to increase pre-booked appointments per day. It is possible that many clinicians themselves did not know they were changing their booking system into a “carved-out model” [17] where more appointments are pre-booked per day resulting in decrease in the proportion of same-day appointments over time. This deviation from the AA model was not verified with individual clinicians in our study. In another survey, many clinic medical directors said they felt understaffed. The directors usually use temporary workers who aren’t trained to use an A.A. scheduling system. The model is effective for scheduling appointments in healthcare facilities, but it needs to be reviewed and adjusted regularly.

Develop contingency plans

At the time of the survey, four out of nine clinics had a contingency plan in place. In the absence of a such a plan, the return of the professional after an extended absence such as a holiday or work in other sectors, can disrupt the equilibrium of the scheduling system. Compensating for the absence may require other professional to offer more time slots, and greater availability on the part of the professional on his return. It can take time to restore the balance.

This study is one of the few to look at the perception of access of

patients in teaching clinics with a longer post-implant AA period. Most previous studies in academic settings comparing traditional scheduling systems with AA measured outcomes within a relatively short time frame of 6 months to one year [15, 23, 24, 26-30].

However, we found two studies that evaluated AA over longer durations of 2.5 years [31] and 5 years [32]. These studies emphasized the importance of leadership, ongoing measurements, and small management changes with effective communication plans to maintain the success of AA.

In a Canadian study using participatory action research, academic directors and deputy directors were followed for 18 months to support AA implementation and identify solutions to implementation challenges. Their solutions included evaluating patient load for each professional, developing contingency plans for absences and rotations, maximizing interdisciplinary practices within the team, and fostering a positive experience for medical residents and the entire team [41].

Strengths and Limitations

The strengths of this study include its focus on comparing post-implementation durations of AA in different clinics, which is a novel approach. Previous studies mostly relied on pre- and post-implementation designs, which may have reflected, as already mentioned, a temporary “honeymoon” effect when all indicators are still under control.

Patients experience

Additionally, this study specifically examined the patients' experience of access, which is often overlooked in research designs [27, 29, 41] that focus on indirect measures of satisfaction or use short surveys with only a few questions [23, 24, 31]. However, this study did not delve deeply into the implementation differences of AA or address the specific challenges experienced by clinics and their solutions. The focus was on gathering patients' experience and perspectives on areas for improvement and aspects appreciated in their clinics (data not shown).

Nevertheless, it remains unclear whether the failure of the study was due to AA itself or the implementation of AA. The superior outcomes observed in clinics that had recently adopted the AA scheduling system, along with the feedback from medical directors, suggest that challenges exist in maintaining, monitoring, and controlling the AA model.

Duration of AA

It is possible that the thresholds could have been different. However, this was not tested. The different timeframes were based on the assumption that with time and experience, the team would be able to make improvements to the scheduling model.

This study took a look at the reality of these clinics and their patients in real time, without the researchers having to weigh in on how they were implemented locally. The results suggest that some of these clinics might need ongoing support.

The participating clinics were different (in terms of size, patient panel, number of professionals), which may limit the generalizability of the results. To mitigate any confounding effects of these differences, clinic characteristics were included in the multivariate analysis.

Conclusion

This research is important because it shows that organizations must keep checking how patients experience their services. This helps them to make sure they are doing a good job. If healthcare organizations combine long-term monitoring of their services with patient experience, they can bridge the gap between what they think and what patients experience. This will lead to better, more patient-centered care. This is realistic if the team is committed to providing better access and teaching it to future doctors and other healthcare professionals.

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